REMARKS

Claims 8-41, 63, 64, and 78-86 are pending in the application. Claims 26-32 have been amended to correct the pendency of the claims. Claims 26-31 have been amended to properly depend from claim 84, 85, or 86 microarray claims. Further, claim 32 has been amended to depend only from claim 31.

Claims 23, 64 and 83 have been amended to correct clerical errors. Support for these amendments can be found, e.g. in the preamble to claim 23 and other claims as filed. Claims 8, 17, 25 and 84 have also been amended. Support for the amendments to claims 8 and 84 can be found in the specification, e.g. on page 14, lines 12-15 and page 19, lines 13-22. Support for the amendments to claim 17 can be found in the specification, e.g. on page 6, lines 3-5 and page 7, line 31 – page 8 line 4. Support for the amendments to claim 25 can be found in the specification, e.g. on page 5, lines 26-28 and page 10, lines 5-6. No new matter has been added.

Issues under double patenting

Applicants acknowledge the Examiner's withdrawal of rejection of claims 8-25 and 27-32 under 35 U.S.C. § 101 as claiming the same invention of claims 1-4, 8-11, 18, 20-28, and 54 of application number 09/853,343.

Applicants also acknowledge the Examiner's provisional rejection under judicially created doctrine of obvious-type double patenting of claims 8-41, 63-64, and 78-88 over application number 09/853,343.

Claims 8, 13-17, 22-25, 27, 31-34, 37, 39-41, and 78-86 have been rejected under the judicially created doctrine of obviousness-type double patenting over U.S. Patent No. 6,048,695. Applicants are here co-submitting terminal disclaimers to address these issues.

Issues under 35 U.S.C. § 102

Plueddemann et al. U.S. Patent No. 4,231,910

Applicants acknowledge the Examiner's withdrawal of the rejection of claims 25 and 27-30 with respect to Plueddemann et al.

Krinski et al. U.S. Patent No. 4,713,116

Applicants acknowledge the Examiner's withdrawal of rejection of claims 9, 17-18, 21, 23-24 with respect to this reference.

Claims 8, 12-16, 63, 64, and 84 remain rejected under 35 U.S.C. § 102(b) as being anticipated by Krinski et al. The legal standard for anticipation under 35 U.S.C. § 102 is one of strict identity. To anticipate a claim, a single prior source must contain each and every limitation of the claimed invention. The Examiner asserts, on page 4, paragraph 2 of the Office Action, that the rejection of claims 8 and 12-16 remains because "a composition comprising an antibody, or a small molecule" meets the limitations in the prior art. Applicants respectfully disagree for the example of the antibody and offer the following arguments, and have here amended with claims with respect to the small molecule.

Krinski (Krinski et al. U.S. Patent No. 4,713,116) reads, "[t]his invention relates to a modified vegetable protein adhesive material useful as a binder and pigment structuring additive for paper coatings as well as a process for producing the same." (*See* Krinski, column 1, lines 7-10, emphasis added). Krinski further states, "The present invention applies to modified protein material suitable as an adhesive in paper coating compositions." (*See* Krinski column 3, lines 8-10).

Krinski does not show any animal protein in its specification. Antibodies are exclusively found as animal proteins in nature. Antibodies are further not generally considered to be suitable as an adhesive in paper coating compositions or as any other industrial adhesive, because of the expense of producing these large heteromultimeric proteins. Because Krinski pertains to vegetable protein, for use as an adhesive material, Krinski does not include compositions that are antibodies.

With respect to Krinski and the phrase "small molecule", the Examiner asserts that the term could apply to a polypeptide as taught by Krinski. Applicants disagree, pointing out that the term "polypeptide" is generally considered by one of ordinary skill to be a macromolecule and is distinct from "oligopeptides" such as a di- or tri-peptide.

Nevertheless, Applicants have amended claims 8 and 84 to stipulate that the small molecules not be biological polymers. Therefore, Krinski is no longer relevant to the small molecules as claimed here. Therefore, Applicants request that this rejection be withdrawn with respect to claims 8 and 84, and claims 12-16 which depend from claim 8.

Therefore, in light of the amendments and arguments herein, Applicants request that the rejection of claims as here amended in view of Krinski be withdrawn.

The Examiner has not made clear in the Office Action whether claims 63 and 64 remain rejected over Krinski. Clarification is respectfully requested.

Beattie et al. U.S. Patent No. 6,426,183

Claims 8-9, 12, 15, 17-18, 21-22, 25-29, 31-32, and 78-81 have been rejected under 35 U.S.C. § 102(e) as being anticipated by Beattie et al.

The Examiner states on page 6, paragraph 2 of the Office Action that Beattie shows, "[a]ttaching a modified compound comprising at least an amine and hydroxy group." The legal standard for anticipation under 35 U.S.C. § 102 is one of strict identity. To anticipate a claim, a single prior source must contain each and every limitation of the claimed invention.

Claim 8 requires that the composition have covalently bound a compound with an R_1 group which is a cyclic ether group. Applicants assert that Beattie in fact does not show a cyclic ether. This limitation is not found in Beattie. Therefore, Beattie does not anticipate claim 8, nor does it anticipate claims 9, 12, 15, or 78 which depend from claim 8.

The Examiner has also maintained rejection of claim 17 and its dependent claims over Beattie. The Examiner on page 6 of the Office Action states that Beattie teaches attaching a biological compound to a silaceous or silane containing substrate. Silane groups taught by Beattie are attached only to a substrate that is insoluble, such as glass. Applicants assert that unlike Beattie, claim 17 is not directed to biological molecules attached to a substrate. Nevertheless, Applicants have amended claim 17 to stipulate that the alkoxysilane group is soluble in solution.

Therefore Beattie does not anticipate claim 17, nor does it anticipate claims 18, 21, 22, and 79-81 which depend directly or indirectly from claim 17.

The Examiner has also maintained rejection of claim 25 and its dependent claims over Beattie. In the Office Action on page 6, paragraph 2, the Examiner states that Applicants argued that, "Beattie does not teach a biological compound having at least an amino group and hydroxy group attached to a silane containing substrate."

Applicants have amended claim 25 to make this limitation clear by specifying that the solid support be underivatized. Beattie does not show any modified biological molecules

covalently attached to a compound having at least an amino group, a hydroxy group, and a silane group, and that is attached to an underivatized substrate. Therefore Beattie does not anticipate the microarray of present claim 25 as amended, nor does it anticipate claims 26-29, and 31-32, which depend directly or indirectly from claim 25.

Beattie is not the same as and thus does not anticipate the claims as amended. Therefore, Applicants request that this rejection be withdrawn.

Gray et al. U.S. Patent No. 5,851,769

Claims 17, 21-29, and 79-80 have been rejected under 35 U.S.C. § 102(e) as being anticipated by Gray et al. In the Office Action on p.8, paragraph 8, the Examiner asserts that Gray teaches a biological molecule bound to a compound with the formula R_1—X—R_2, wherein R_2 is an alkoxysilane.

Applicants above discussed the modified biological molecule of present claim 17, in which the alkoxysilane group is soluble in solution. In contrast, Gray does not show such a compound which is soluble in solution. Rather, it is the solid substrate in Gray that contains the alkoxysilane. For example, Gray states in column 19, lines 49-51; "[i]n a preferred embodiment, standard microscope slides and coverslips are treated with 3-aminopropyltriethoxysilane (APS)."

Applicants have amended claim 17 to stipulate that the R_2 alkoxysilane must be soluble in solution. In contrast to Gray, the modified biological molecule in the present invention, is bound to the alkoxysilane in solution, not attached to the substrate. Support for this interpretation is found in the specification of the present invention, which states:

> The following example describes one form of modified nucleic acid of the present invention. The purpose of the chemical modification is to enable the nucleic acid to be readily affixed to an underivatized solid surface. In this example, the nucleic acid--preferably DNA--is modified by reaction with 3-glycidoxypropyl-trimethoxysilane (GPTS), according to **Fig. 1**. GPTS has in fact been previously used to derivatize a glass surface upon which (unmodified) DNA samples are then contacted and immobilized. Yet the use of GPTS is for the opposite purpose: to modify the DNA for subsequent attachment to an underivatized glass surface, has not been previously disclosed nor suggested. Moreover, GPTS--since it contains an epoxide group--is known to damage DNA *in vivo*. For these reasons, its use to derivatize DNA is actually discouraged by the prior art. [See page 10, lines 1-15 of the specification].

The invention of claim 17, joining an alkoxysilane group and biological molecule in solution is not taught by Gray. As claims 21-29 and 79-80 depend from claim 17, they take on any limitation as amended in claim 17.

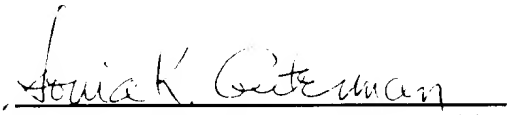
Therefore, Applicants respectfully request that rejection of claims in view of Gray et al. be withdrawn.

CONCLUSION

Applicants submit that the claims as here amended put the application in condition for allowance, and such action is respectfully requested.

Should any questions or issues arise concerning the application, the Examiner is invited and encouraged to contact the undersigned at the telephone number provided below.

Respectfully submitted,



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